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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,832	02/28/2004	Kyung-Ju Choi	ZM921/05023	7344

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EXAMINER
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MATZEK, MATTHEW D

ART UNIT	PAPER NUMBER
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1794

MAIL DATE	DELIVERY MODE
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11/17/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/788,832	<b>Applicant(s)</b> CHOI, KYUNG-JU	
	<b>Examiner</b> MATTHEW D. MATZEK	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 22-29 and 33-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-29 and 33-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/08</u> .  | 6) <input type="checkbox"/> Other: _____                          |

***Response to Amendment***

1. The amendment dated 8/5/2008 has been fully considered and entered into the Record. Claims 22, 29 and 33 have been amended and contain no new matter. The previous prior art rejections have been withdrawn as they failed to teach or suggest increasing permeability within a discrete layer thickness. Claims 22-29 and 33-44 remain active.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 22-26, 33, 38, 39, 41, 42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Healey (US 2002/0187701) in view of Shipp, Jr. et al. (US 4,714,647).

a. Healey discloses a filter media that includes a middle-filtering layer formed from at least one meltblown layer. (Abstract) Figure 2 illustrates a filtering component 14 formed from three meltblown layers [0029]. The meltblown layers have different gradients of basis weight (claim 23). It is the Examiner's interpretation that such gradients provide for gradients in porosity between the different layers. In particular, Healey teaches fiber size distributions within the claimed ranges, the first outer layer and the filter layer would necessarily possess differing permeabilities and porosities in order for the filter layer to separate out particles that are not captured in the first outer layer [0027-0029]. The fibers and filaments of Healey are attenuated by a gas stream [0034] and deposited on to a collecting surface to form a web of randomly dispersed fibers. The random disbursement would serve the same function as the process of claim 25. The individual layers may be textured to facilitate bonding to adjacent layers [0010], which

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results in the claimed interspersed manner. As shown in the Figures the layers of the filter media may be combined in a successive manner. Healey fails to teach or suggest increasing permeability through the thickness of a given layer.

b. Shipp, Jr. et al. disclose a filter medium formed by sequentially depositing layers of melt-blown thermoplastic fibers having the same composition, but different sizes forming a laminate web with fiber size and permeability gradients through the thickness of said laminate web (abstract and col. 5, lines 48-65). This process may be replicated to form a multi-layer laminate with either decreasing or increasing impermeability depending on which surface of the laminate is used as the upstream side.

c. Since Healey and Shipp, Jr. are from the same field of endeavor (i.e. filters), the purpose disclosed by Shipp, Jr. would have been recognized in the pertinent art of Healey.

d. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention of Healey with the graduated fiber sizes and permeability with the motivation of preventing premature plugging of the upstream surface, while offering the filter consistent integrity throughout to assure predictable filtration and avoiding delamination between layers as disclosed by Shipp, Jr. et al. (col. 4, lines 1-23).

3. Claims 22-24, 26-29, 33-39, 41, 42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Airflo (EP 0 960 645 A2) in view of Shipp, Jr. et al. (US 4,714,647).

a. The EP '645 reference relates to a disposable vacuum cleaner bag composition.

The reference discloses a three-layer vacuum cleaner bag construction (refer to Figure 4)

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that comprises a filtration grade meltblown layer with fibers with diameters in the range of 1-15 micrometers and air permeability of 100-1500 L/(m<sup>2</sup> x s) and a high bulk meltblown layer with fibers with diameters in the range of 5-20 micrometers and an air permeability of 300-8000 L/(m<sup>2</sup> x s) (Refer to Table 1). The range of diameters for the fibers within each layer anticipates the new claim limitations of varied fiber sizes and the media's resultant permeability and porosity within each layered mat portion. With regards to the mode the meltblown material is produced, refer to [0054] in which the reference teaches attenuating the filaments upon formation. As shown in the Figures the layers of the filter media may be combined in a successive manner and would intersperse when adjacent layers are bonded together. Airflo fails to teach or suggest increasing permeability through the thickness of a given layer.

b. Shipp, Jr. et al. disclose a filter medium formed by sequentially depositing layers of melt-blown thermoplastic fibers having the same composition, but different sizes forming a laminate web with fiber size and permeability gradients through the thickness of said laminate web (abstract and col. 5, lines 48-65). This process may be replicated to form a multi-layer laminate with either decreasing or increasing impermeability depending on which surface of the laminate is used as the upstream side.

c. Since Healey and Shipp, Jr. are from the same field of endeavor (i.e. filters), the purpose disclosed by Shipp, Jr. would have been recognized in the pertinent art of Healey.

d. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention of Healey with the graduated fiber sizes

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and permeability with the motivation of preventing premature plugging of the upstream surface, while offering the filter consistent integrity throughout to assure predictable filtration and avoiding delamination between layers as disclosed by Shipp, Jr. et al. (col. 4, lines 1-23).

4. Claims 22-27, 33, 34, 36, 38-41 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Healey (WO 01/32292 A1) in view of Shipp, Jr. et al. (US 4,714,647).

a. Healey discloses a filter media comprising a synthetic micro fibers polymer fine fiber wherein the diameter of the fibers is between about 0.8 to about 1.5 microns.

(Abstract) The range of diameters for the fibers within each layer provides for the claim limitations of varied fiber sizes and the media's resultant permeability and porosity

within each layered mat portion. In Figure 2, the reference discloses a filter media

composite 10 that includes a coarse fiber layer 16 and a meltblown polymer fine fiber web 14, which is mechanically entwined with coarse fiber layer 16. (Refer to page 22,

lines 24-30) The reference teaches that the coarse synthetic micro fiber, e.g. meltblown, material which serves as a pre-filter has a fiber diameter between about 5 to about 20

microns. (page 5, lines 1-5) In Figure 3, the reference teaches additional layers. The

meltblown fibers are attenuated (page 31) and deposited on to a collecting surface to form

a web of randomly dispersed fibers (page 9). The random disbursement would serve the

same function as the process of claim 25. It is the Examiner's interpretation that the

mechanically entwined fibers read on the presently claimed entangled portions. As

shown in the Figures the layers of the filter media may be combined in a successive

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manner and would intersperse when adjacent layers are bonded together (page 5). Healey fails to teach or suggest increasing permeability through the thickness of a given layer.

b. Shipp, Jr. et al. disclose a filter medium formed by sequentially depositing layers of melt-blown thermoplastic fibers having the same composition, but different sizes forming a laminate web with fiber size and permeability gradients through the thickness of said laminate web (abstract and col. 5, lines 48-65). This process may be replicated to form a multi-layer laminate with either decreasing or increasing impermeability depending on which surface of the laminate is used as the upstream side.

c. Since Healey and Shipp, Jr. are from the same field of endeavor (i.e. filters), the purpose disclosed by Shipp, Jr. would have been recognized in the pertinent art of Healey.

d. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention of Healey with the graduated fiber sizes and permeability with the motivation of preventing premature plugging of the upstream surface, while offering the filter consistent integrity throughout to assure predictable filtration and avoiding delamination between layers as disclosed by Shipp, Jr. et al. (col. 4, lines 1-23).

5. Claims 25, 40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Airflo (EP 0 960 645 A2) in view of Shipp, Jr. et al. (US 4,714,647) as applied to claims 22 and 33 above, and further in view of Healey (WO 01/32292 A1). The EP '645 reference is silent to the entangling of the fibers.

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- a. Healey provides a similar fibrous filter media and teaches mechanically entwining the fibers to bond the layers. (Page 22, lines 24-30).
- b. Since '645 and Healey are from the same field of endeavor (i.e. filter media), the purpose disclosed by Healey would have been recognized in the pertinent art of '645.
- c. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the filter media and provide with it with mechanical entwining with the motivation of bonding the layers without the use of adhesives.

***Response to Arguments***

- 6. Applicant's arguments with respect to claims 22-29 and 33-44 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW D. MATZEK whose telephone number is (571)272-2423. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571.272.1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew D Matzek/  
Examiner, Art Unit 1794

/Norca L. Torres-Velazquez/  
Primary Examiner, Art Unit 1794